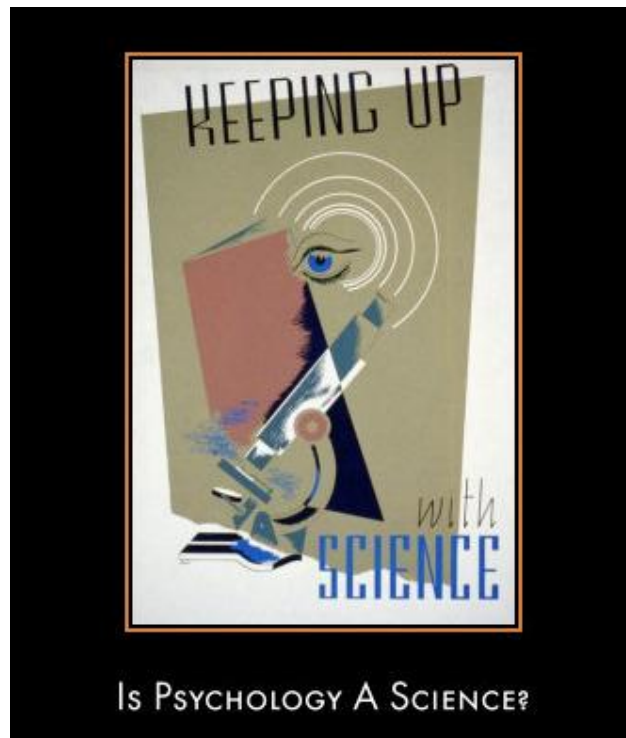


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(Article Originally Published in Popular Science 1874)

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Great as were the services of Mr. John Stuart Mill to philosophy in general and Psychology in particular, we cannot ascribe to him any notable advance in psychological doctrine, or in the conception or application of psychological method. In doctrine, his chief contributions were the restatement, in a form adapted to the changed conditions of the controversies, of Berkeley's theory of material, and Hume's theory of mental, existence. But neither the psychological theory of mind nor the psychological theory of matter contains any new principle, or exhibits any new way of applying old principles.

In constructive method, he could get no further than Brown's half-century-old "chemistry of the mind" and though he earnestly recommended the St. Andrew's students to make the acquaintance of Physiology, as supplying to Psychology the principles of predisposition, habit, and development, he never made the smallest use of these principles himself, and had not a single word to say in favor of Mr. Spencer's use of them.

That he still traded on the old conceptions is evident from his metaphors: the "thread of consciousness" is a decided advance on Locke's "gang of ideas," but he shies at Prof. Masson's "organic union" of states and prefers to connect them by an "inexplicable tie." Mill, in fact, was above all things a logician, and whatever he accomplished in the sciences was in virtue of his clear perception of the extent of a principle, the limitations to which it was subject, and the conditions under which it could be most fruitfully applied. His services to psychological method were of this order, and therefore belong rather to the logic of science than to the history of Psychology. But, as his luminous exposition of the logical status of the "laws of mind" had an unquestionable influence on the most systematic application of these laws yet made, in the comprehensive work of Prof. Bain, it will be proper to inquire whether this advance too had its antecedents in the physical sciences.

Mill's logic of psychology is characteristic. Like all his doctrines, it has a positive and an hypothetical part - the hypothetical admitting almost all that his opponents of every school would assert, and the positive so stated as if those admissions had not been made. The positive aspect of it may be embodied in three propositions. Psychology is a

science, because the facts of mind present certain uniformities of succession, which we call laws. It is an independent science, because its laws are ultimate, and cannot be deduced from the physiological laws of our nervous organization. Finally, this science has certain limits which are stated, however, with a vacillation and obscurity very far from usual with so clear and resolute a thinker, but which appear to be: that sensations of one sense cannot be resolved into those of another; that "the other constituents of the mind, its beliefs, its abstruser conceptions, its sentiments, emotions and volitions," have probably not been generated from simple ideas of sensation; and that, even if this can be proved, "we should not be the more enabled to resolve the laws of the more complex feelings into those of the simpler ones."

In the hypothetical part (Which has been much more strongly expressed in the later editions of the "Logic," though without any corresponding alteration of the positive part), Mill is quite prepared to admit that "the laws of mind may be derivative laws resulting from laws of animal life, and that their truth, therefore, may ultimately depend on physical conditions." But the probability of this genesis being shown, he apparently regards as so remote that it is not worth while to take the antecedent physical conditions into account except as disturbing agencies. He refuses to see that if the evolution of the higher forms of life from the lower can be made out, we do not say as an induction, but even as a good working hypothesis, the foundations of Psychology will be subverted, and it will be changed from what we may call a statical into a dynamics science.

Mill belonged, less by age than by precocious mental development, to a generation which found in him its perfect scientific, and in Mr. Carlyle its most consummate literary, expression. In literature, it turned with reverted eyes to an ever-receding golden age, and wrote histories; in science, the impulse was rather to widen, clear, and connect the old paths, than to strike out in new directions - to get round obstacles!, than to tunnel them. "Reaction" is so ready a spell to conjure meaning out of facts by pretending to put an explanation upon them, that we will not ascribe the critical mood of the last generation to mere revulsion from the profuse hypotheses of the period when Chemistry promised to reveal the secret constitution of Nature; but, clearly,

after a time of discovery and accumulation of facts, there comes the necessity for arrangement, classification, method, and the logician takes the place of the discoverer.

To this work the generation of 1820-1850 set itself in no scholastic spirit, and one of its first achievements in the new field was Herschel's picturesque and elevated "Discourse." Ardent and imaginative as is that fine essay, it is nevertheless essentially logical. Four of his nine "rules of philosophizing" were converted by Mill into the experimental methods, and thus made a part of the logic of proof; his conception of a law is predominantly that of a generalization which seems to imply no inductive leap; and he appears to look for the openings to future discovery in the purely analytic direction of finding some more general laws of which the laws already discovered are cases so faithfully did the work embody the tendencies of the period that its phraseology at once became classic, and its ideas of cause and law the commonplaces of science.

They certainly formed a large portion of the mental pabulum of Mill, and are reflected, though with infinite widening and clarification, in the "System of Logic." We have already said that his four "methods" were but four of Herschel's "rules;" Herschel's "presumed permanence of the great laws of Nature" appears in Mill as the statement that "the uniformity of the course of Nature is the ultimate major premise in all cases of induction," and the relations of induction and deduction, the value and test of hypotheses, the nature of empirical laws, and the analysis of cause - are all striking aperçus which Mill pursued to their limits on every side, and thus was able to give to the exposition of them systematic completeness.

All these conceptions, as being important parts of the logic of science, belong equally to the logic of psychology, and, if their statement in reference to mental science is due to Mill, the statement of them in reference to science generally is due to Herschel. But we are here more concerned to point out that the scientific conditions laid down by Mill as defining the logical status of psychology belong to the type of physical investigations of which Herschel was an early representative. The definition of science as having for its subject "uniformities," the description of the independence of a science as arising out of the irreducibility of its laws to other laws, and the exposition

of the limits of scientific inquiry - all find their prototypes in the "Discourse. Here again, therefore, the advance in Psychology, though only logical, had its initiative in the physical sciences.

The rate of change quickens as the type of social structure rises, and the progress made by Psychology within the present generation is not only far greater than has been before made in any period of equal length, but greater than has been made since the foundation of the science. The large acquisitions of new facts, the faithful description of phenomena, the reduction of them to law, and the investigation of the physical "sides" of mental products, which we owe to Prof. Bain, and the application to mind of the revolutionary principle of development, and the inclusion of it within the larger philosophy of evolution, which we owe to Mr. Herbert Spencer, have changed not only the aspect but the constitution of Psychology. Like all the previous advances we have recorded, the developments due to both of these distinguished psychologists have had their dynamic in the subsidiary sciences.

Mr. Bain describes his work as being "the first attempt to construct a Natural History of the Feelings, upon the basis of a uniform descriptive method," and the characterization is just. All preceding surveys of the mind had been undertaken to establish a doctrine as by Hobbes; or to refute a theory, as by Locke; to prove an hypothesis as by Hartely; or to furnish analytical justification of a foregone conclusion, as by the elder Mill.

Mechanics, Natural Philosophy, and Chemistry, having exhausted their constructive impulses on Psychology, it was reserved for Mr. Bain to adopt a method which makes no presuppositions, rests on no hypothesis and conducts to no necessary conclusions - the method employed in the organic sciences in their undeveloped state. The natural history "method" is very old. The first full-blown specimen of a naturalist, whose reputation has reached posterity, appears to have been Solomon, and of him it is said that "he spake of trees, from the cedar-tree that is in Lebanon even unto the hyssop that springeth out of the wall: he spake also of beasts, and of fowl, and of creeping things, and of fishes." Linnaeus was even more comprehensive, and added minerals to plants and animals; but with him the differentiation of science and accompanying

specialization of method begin. The first great classifier himself constituted Botany a separate science; Haüy followed with Mineralogy; the discovery of Oken (or Goethe) and the theories of St. Hilaire founded Comparative Anatomy; Comparative Physiology issued out of its sister science; and morphological and functional divisions of all these sciences were successively established. With such advances in classification, the natural history method becomes immensely more complex, but its character is fundamentally the same - that of description.

We cannot better exemplify this than by quoting the words of Dr. Carpenter. Contrasting him with the "enterprising discoverer," the horticulturist, and the breeder, he says that -

"The philosophic naturalist.... aims to reduce the number of species, by investigating the degree of variation which each is liable to undergo, the forms it assumes at different periods of its existence, the permanent characters by which it may be distinguished during its whole life, the habits which are Natural to it, the degree in which these may be changed by the influence of circumstances; and, in fine, he endeavors to become acquainted with the whole Natural History of a reputed species, before separating it from another to which it may be closely allied."

The "philosophic naturalist" plainly requires just so much philosophy as is implied in keeping his eyes open, and, indeed, so long as species were believed to be separately created, and organic character could be only correlatively and not genetically explained, there was nothing else for him to do. Natural History before Darwin was like Natural Philosophy before Newton; its induction were incomplete and the deductive procedure which could alone raise its constituent groups into sciences was impossible.

It was at this stage in the development of Natural History that Mr. Bain took up its method, and set about applying it to the "Feelings." Its power in the hands of a keen and dispassionate observer is indisputable, and the two instructive volumes which contain Mr. Bain's systematic exposition are at once a treasure-house of observations of priceless value, and such compendious generalization of mental facts of all orders into laws as doubtless marks the climax of the method. But it is fundamentally unscientific. If it be true that the higher forms of life and mind have been evolved out

of the lower, then the most resolute introspection and the most cutting analysis, with the help of stray observations on children, and some patient experimenting on animals, will go no appreciable distance in discovering mental constituents which may have had their origin in an indefinitely remote past. That this is not only a necessary result of the "natural history method," but that it has in point of fact resulted in Mr. Bain's treatise, it may be well to make clear. To keep the analogy in view, we again quote from Dr. Carpenter. "The naturalist," he says

"endeavors to simplify the pursuit of his science, by the adoption of easily recognized external characters, as the basis of his classification of the multitudinous forms which he brings together; but such can only be safely employed when indicative of peculiarities in internal structure, which are found to be little subject to variation, and which are not liable to be affected by the influence of physical causes."

Now, such an endeavor to simplify, by the adoption of easily-recognized external characters as the basis of his classification, is a feature prominent in the fore-front of Mr. Bain's work. The mode of diffusion of an emotion, the institutions it generates, and its peculiarities as a state of consciousness all of them the most manifest characters of the emotions—are avowedly adopted as bases of classification. That easily-recognized external characters are not always "indicative of peculiarities in internal structure," has been shown by Mr. Spencer, and is indeed a corollary from the theory of development. Mr. Bain's method is therefore misleading from its contrasted range, but we must here record, as part of our history, its very great advance on the still more incomplete methods of the older psychologists.

Mr. Bain's other contributions to Psychology are connected with the recent development of one of the sciences whose general method he appropriated. The physiology of the nervous system was of late foundation. Vesalius, Fallopius, Vieussens, Boerhaave, and Willis, had indeed assigned the special functions of certain organs (as those of the senses) to their appropriate nerves, but even in the middle of the eighteenth century the great Haller could deny the existence of any nerve which did not possess the double function of sensation and motion. Whytt and Prochaska, in

1768 and 1800, made observations on reflex and spontaneous movements, and decisively raised the question of the mode of action of the nervous system.

In the first quarter of this century Sir Charles Bell established the existence of two great systems of nerves, with different functions, and thus revealed a definite mental mechanism. A few years later Dr. Marshall Hall (or some one else) discovered the independent action of the spinal cord, and helped further to determine the organic conditions of mental activity. His contemporary, Müller, went so far as to assert that the spinal cord was the centre or source of all motor power. At this point Mr. Bain came into the field. Appropriating the discovery of Hall, he was the first among psychologists to attempt systematically to elucidate the spontaneous movements, as no less a part of the phenomena of mind than those of consciousness. Combining Bell's discovery with a hint of Müller, he introduced the first organic modification into the association psychology by his theory of the brain as a fountains of force and not merely the passive instrument of impressions. This theory has led him, not only to take into account the secondary mental states generated by the bodily organs, but to trace genetically the origin and growth of voluntary power, and thus to constitute a separate department of Psychology by the analysis of volition, which had previously been the victim of introspection. It has also led him to devote a section to "constructive association," which could have no place so long as there was recognised in the mind no power of original construction. The tendency to materialize the mental agencies - the assumptions that nerve-force is of the nature of a current, that it moves in diffused waves, that associations are generated by shocks - are consequences partly of the introduction of the same new elements They are consequences also of that assumed correlation of the mental and nervous with the physical forces which Mr. Bain has, in his later editions, done much to prove and illustrate.

"If Mr. Herbert Spencer had no other titles to fame, he would still be the greatest of psychologists. The vast constructions of his 'First Principles' will ever be a monument of his extraordinary powers of generalisation. His designed organization of the Social Science opens up the prospect of intellectual acquisitions in the future to which the past may furnish few parallels. But the 'Principles of Psychology' will still remain, in its symmetrical completeness and perfect adequacy to the subject, at once the most

remarkable of his achievements and the most scientific treatise on the Mind which has yet seen the light. Its publication in 1855 did not make a sensation. The persistent efforts of Mill had not yet succeeded in stemming the muddy tide of the prevailing scholasticism. The bastard Kantism of Hamilton did duty for metaphysics, and the Common-Sense philosophy of Reid, with the common-sense left out, usurped the place of Experimental Psychology.

Experimental Psychology was, as usual, busy with analysis and had no eye for the merit of an imposing synthetical effort. Mr. Spencer's work had accordingly a chill reception. Greeted by the aristocratic metaphysicians with a few words of courtly compliment, but treated practically with supercilious disregard, it was received by psychologists of the Association school with hardly more favor than the snarling approval with which a Constitutional Whig views the entry into the Cabinet of a Birmingham Radical. Mr. Spencer was ahead of his generation, and paid the penalty of his prescience in twenty years of neglect. But now the wheel is coming round. The bovine British public, constitutionally disposed indeed to apathy, but drugged into a leaden slumber by its medicine-men, is at last awakening to the fact that the peer of Bacon and Newton is here. Writers of all schools are hastening to define their position with reference to the Synthetic Philosophy."

A younger generation has grown up, with minds unhardened by the limitations of obsolete Sensationalism, and inclined rather to a somewhat undisciplined acquiescence in what the Germans call "world-shattering," that are also world-constructing, theories. But "whatever part of his philosophy may be transitory, Mr. Spencer's present influence is indisputable; and, since the lamented death of Mill, no one can now contest his claims to the philosophic supremacy in these islands. That supremacy rests mainly on his Psychology." Cosmological speculation has been so long out of date that we are hardly yet able to incorporate his "first principles" as a vital and vitalizing part of our mental acquisitions. Sociological inquiries are just coming into fashion under the dusky auspices of the "savage races;" but the Social Science, though undoubtedly destined to play a great part in the immediate future, still wants an audience, except for sanitary discussions in autumn among peripatetic philanthropists in provincial towns. But Psychology, at least, the kind of thing found in Reid with an

infusion of Hamilton, has long formed part of the higher education in Scotland; and at one of the English universities the hash of cosmology, metaphysics, logic and ethics, named Aristotelianism, yields under pressure some small psychology. Besides being, therefore, in whatever rudimentary forms, a pet academical study, much encouraged by philosophically-minded Heads, the science itself is vastly further advanced than any of the mental sciences, its province is tolerably well defined, in the statement, at least, of its main problems the most opposite schools agree, and both likewise agree in the tests to be applied to their solutions.

A pretender to psychological discoveries has accordingly a decided advantage over his brother discoverer in the more embryonic mental sciences in so far that, if he is not out of sight ahead of his generation, he can secure a competently-instructed audience, eager and, on the whole, capable to decide on his pretensions. The extreme fascination of Mr. Spencer's theories, and doubtless their fundamental truth, have obtained for him a large clientèle; and the position of the philosophy of mind as the foundation of all other philosophies, social, ethical, aesthetic, and political, has created channels through which his characteristic ideas have percolated in all directions. Such a supremacy as this could only have been gained, if our history of the parallel development of the physical and mental sciences be exact, by a substantial identity of the method and unity of the principles of the synthetic psychology with those of the last-developed organic and inorganic sciences. We shall see that this is the case.

Mr. Spencer's numerous psychological advances may be grouped in two divisions; the application to mind of the theory of development, and the connection of psychological evolution with evolution in general. The last edition of his work also incorporates Mr. Darwin's law of natural selection in the explanation of the emotions, but this may be regarded as simply an extension of the development theory. In the working out of both principles, Mr. Spencer has followed the lead of the physical sciences.

Before it could be discovered that species were evolved from one another, it had to be discovered that there were among them fundamental kinships. The foundation of the comparative sciences was the beginning of the movement, and we suppose that Goethe's "Sketch of a Universal Introduction into Comparative Anatomy" may be

regarded as striking the first note. Thirty years' further research reduced the skull of all vertebrate animals to a uniform structure, and determined the laws of its variation. In 1820 Audouin partially succeeded in filling up the chasm between insects and other animals. In 1830 Laurencet and Meyraux assimilated the structure of mollusks to that of vertebrates. Out of these discoveries an internecine war arose between the schools of Cuvier and Geoffroy St.-Hilaire, the former contending that the structure and functions of animals should be studied in the light of final causes, the latter setting up their analogies as the only safe guide.

And out of the struggle came the new philosophy. "The principle of connection," says Whewell, "the elective affinities of organic elements, the equilibration of organs - such are the designations of the leading doctrines which are unfolded in the preliminary discourse of his" (St.-Hilaire's) "Anatomical Philosophy." Elective affinities of organic elements are the forces by which the vital structures and varied forms of living things are produced; and the principles of connection and equilibrium of the forces of the various parts of the organization prescribe limits and conditions to the variety and development of such forms."

Now for the first time we hear such phrases as "unity of plan," and (more significant still) "unity of composition." Then came Von Baer's law of progression of structural development from the general to the special, afterward extended to functional development, and giving rise to the conception of the specialization of functions. Out of this, too, arose the term "evolution," and, though confined to organic development, implied an advance in generalization. The mere mention of such further advances as are implied in the establishment of the functional identity between the contractile tissues of plants and those of the higher animals; in the use of the phrase "psychical powers" to designate the sensorial and mental endowments of animals; in the proof of the absence of specialized sensibility among the lower tribes of animals, and of the hereditary transmission of certain characters acquired under the influence of external circumstances; in the parallel traced between the progressive complication of the psychical manifestations during the early life of a human being, and the gradual increase in mental endowment to be observed in ascending the animal scale - may serve to indicate the conceptions forming the matrix in which a philosophically

constructed Psychology was to be moulded. How great a revolution had taken place in biology, and how far we have now got from the natural history method, may appear from Prof Huxley's definition of "zoological physiology," which, though made some years after the first publication of the "Principles of Psychology," at least points out the direction in which thought had been moving. He says:

"It regards animal bodies as machines impelled by certain forces, and performing an amount of work, which can be expressed in terms of the ordinary forces of Nature. The final object of physiology is to deduce the facts of morphology, on the one hand, and those of distribution on the other, from the laws of the molecular forces of matter."

With a prescient insight into the future of science which has probably few parallels, Mr. Spencer founded his Psychology on the hypothesis of development. To all but a few deep-thinking observers there can have seemed few signs in 1855 that that hotly-disputed theory was ever likely to be in the ascendant. The exposition of none of the organic sciences that we know have had yet been based on it, and its application to mind was undreamed of. But with a confidence in the intuitions of reason which is one of the clearest attributes of speculative genius, and which may have its dialogue in the statesman in the nerve to take the vessel of the state over a bar, Mr. Spencer assumed the provisional truth of the theory, and it might be difficult to exaggerate the extent to which his exhibition of it in Psychology has contributed to its establishment.

It was first requisite to find a generalization on which to base a synthetic Psychology. The assumption being made that mind and bodily life are but Subdivisions of life in general, it was required to seek out some characteristic common to both - some characteristic of vital actions in general, and distinguishing them from non-vital actions. Applying a method which Prof. Stanley Jevons has omitted to note in his "Character of the Experimentalist," Mr. Spencer arrives at a definition of life of which the essential point is that it implies a correspondence between life and its circumstances. Here is the first notable advance - the inclusion of the envioning world in the definition of the science of mind; and in this is contained the germ of Mr. Spencer's later differentiation of Psychology and circumscription of its province.

If correspondence with the environment is the differentia of life, it is almost an identical proposition to assert that the degree of life will vary with the completeness of the correspondence and the complexity of the environment. An ascending synthesis accordingly finds the correspondence at first direct and homogeneous, then direct but heterogeneous, as extending in space and in time, and as increasing in specialty, in generality, and in complexity. Along with the all-sided development thus going on in the correspondences, there goes on a development in the degree in which the organs and functions of the individual are so correlated and united as to respond promptly and effectually to the answering changes in the environment. Contemplating now the correspondences in their totality, it is found that the generalization on which it was proposed to base a synthetic Psychology is established, that manifestations of intelligence are found to consist in the establishment of correspondences between relations in the organism and relations in the environment, and the preliminary assumption that life and mind are fundamentally identical is proved.

Nevertheless, though these two kinds of life are primordially the same, they are in their general aspects widely unlike, and we must inquire whence the differences arise. Instinct, Memory, Reason, Feeling, and Will, have specific differences; a science of Psychology which is based on the theory of development must determine whence these arise, and, if mind is merely a higher manifestation of life, they must be interpretable as life was interpreted.

Intelligence in general is differenced from life in general by the fact that the order of change of which it consists is successive. The science of intelligence having thus for its subject-matter a continued series of changes, it is the business of Psychology to determine the law of their succession. Bringing up the "law of correspondences" left in the rear, it is found that one mental state tends to follow another with a strength proportionate to the intimate union between the external things they represent. Here is a "law of association" of Hegelian depth, cutting down to the adamantine pillars of the universe, and compared with which the so-called laws of association are mere empiricism. The law is also of Hegelian content - rivaling that cocoon *Das Werden*, and out of it shall be woven all the phenomena of unfolding intelligence. Reflex action we have already seen Mr. Bain incorporate in Psychology; Mr. Spencer shows how it

necessarily arises out of developing life. Instinct, too, Mr. Bain prefixes to his analysis of ideas; Mr. Spencer evolves it out of reflex action.

With the increasing complexity of experience Memory arises, and Mill's "insoluble problem" is solved. The chapter on Reason is, perhaps the finest synthetic exposition in the literature of Psychology. Reason, like Memory, is shown to be developed by an insensible transition out of instinct; and Locke is reconciled with Kant by the intervention of that theory of the secular transmission of mental acquisitions which has become so familiar that it is now difficult to appreciate its daring originality. Feeling, like Reason, arises out of instinct; and emotions of the greatest complexity, power, and abstractness, are formed out of the simple aggregation of large groups of emotional states into still larger groups through endless past ages. Thus out of the feeble beginnings of life have been woven all the manifestations of mind, up to the highest abstractions of a Hegel and the infinitely complex and voluminous emotions of a Beethoven. Well may a French writer say: "Si on la rapproche par la pensée des tentatives de Locke et de Condillac sur ce sujet, la genèse sensualiste paraîtra d'une simplicité enfantine."

Hitherto the psychologist, proceeding objectively, has made no use of consciousness and it is now necessary, in order to justify the findings of the synthetic method, to examine consciousness in the only possible way - by analysis. Setting out with the highest conceivable display of mind, compound quantitative reasoning, he tracks all the mental phenomena down to that which is only a change in consciousness, the establishment of the relation of sequence, and proves that the genesis of intelligence has advanced in the same way as was shown in the synthesis - by the establishment and consolidation of relations of increasing complexity. Thus throughout all the phenomena of mind there exists a unity of composition; and the doctrines of innate ideas, intuitions by gift of God, supernatural revelations, mysticism of all kinds, have the ground cut from under them.

The very great extension of plan which Mr. Spencer's work received between 1855 and 1870-72 was due solely to the creation of his own philosophy of evolution. That in its turn had its initiative in the theory of the correlation of forces advanced by Grove in

1842. As the new philosophy conceived all existence to result from evolution through differentiation and integration, it was incumbent on Mr. Spencer to show that mental phenomena, or at least the physical core relatives of them, can be interpreted in terms of the redistribution of matter and motion, and explained by a series of deductions from the persistence of force. This is the task of a Physical Synthesis, which shows the structure and functions of the nervous system to have resulted from intercourse between the organism and its environment. And thus is laid the coping-stone of a treatise which has definitively constituted Psychology a science.

With the definitive constitution of the science our inquiry, which began with the differentiation of its subject-matter, comes to an end. We have seen mind slowly emancipating itself from the barbaric Cosmos, and raised into an independent object of speculation. Once "differentiated" it begins itself to unfold, and at the same time to gather round it the at first alien facts of sensation, appetite, and bodily feeling generally. These are increasingly matter of inquiry, and theories respecting them take the hue and shape of the sciences which relate to the material world.

The science of motion evolves, and the idea of orderly sequence enters into Psychology. Natural Philosophy rises from motion to force, and Psychology passes from conjunction to causation. Chemistry tears aside a corner of Nature's veil, and a shaft is sunk in a mysterious field of mind. The sciences of organic nature receive a forward impulse, and mind and life are joined in extricable union. A philosophy of the universe, incorporating all the sciences, is created, and Psychology, while attaining increased independence as regards the adjacent sciences, is merged in that deductive science of the Knowable which has more widely divorced, and yet more intimately united, the laws of matter and of mind.

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